



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,770	06/21/2006	Masashi Hashimoto	03500.119746.	5898
5514 7590 11/05/2010 FITZPATRICK CELLA HARPER & SCINTO 1290 Avenue of the Americas NEW YORK, NY 10104-3800				
EXAMINER				
BOHATY, ANDREW K				
ART UNIT		PAPER NUMBER		
1786				
MAIL DATE		DELIVERY MODE		
11/05/2010		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/583,770

Applicant(s)

HASHIMOTO ET AL.

Examiner

Andrew K. Bohaty

Art Unit

1786

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/C)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 28, 2010 has been entered.
2. This Office action is in response to the amendment filed September 28, 2010, which cancels claims 12, 14-16, 21, and 22 and adds claim 23. Claim 23 is pending.

Response to Amendment

3. The applicant's cancellation of the claims, filed September 28, 2010, has caused the withdrawal of the rejection of claims 12, 14-16, 21, and 22 under 35 U.S.C. 103(a) as being unpatentable over Robello et al. (US 2005/0123787) in view of Suzuki et al. (WO 2004/020372) and Sudhakar et al. (J. Am. Chem. Soc. 2003, 125, 7796-7797) as set forth in the Office action mailed July 16, 2010.

Response to Arguments

4. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Specification

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

6. Claim 23 is objected to because of the following informalities:
7. The location of the period, before "group 2" should be moved to be after "group 2", so the claim is only one sentence.
8. Appropriate correction is required.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

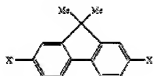
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

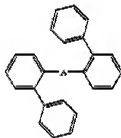
11. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Robello et al. (US 2005/0123787) (hereafter "Robello") in view of Suzuki et al. (WO 2004/020372) (hereafter "Suzuki"), Sudhakar et al. (J. Am. Chem. Soc. 2003, 125, 7796-7797) (hereafter "Sudhakar"), and Kishino et al. (US 2005/0084710) (hereafter "Kishino").

12. Regarding claim 23, Robello teaches the following formula, X'-A-X" (formula (1), paragraphs [0011]-[0012]), where A and X' and X" have a limited number of choices



(paragraphs [0018]-[0020]), which includes

as the A



component and

as the X' and X" components. Robello teaches

the host materials having that fall under the limitations of formula (1) will provide improved efficiency, stability, and spectral characteristics of electroluminescent devices (paragraph [0010]). Robello teaches the materials can be host materials for red, blue, or green phosphorescent dopants (paragraph [0028]).

13. Robello does not teach that A can be three consecutive fluorene units and where the light emitting dopant is two phosphorescent dopants.

14. Suzuki teaches an organic electroluminescent device comprising a light emitting layer, where the light emitting layer comprises a host material and a light emitting

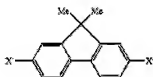
dopant (page 15 line 20 through page 16 line 25). Suzuki teaches the host material is a fluorene containing material where the number of consecutive fluorene units found in the material is preferably 1 to 3 (page 4 line 15 through page 5 line 25). Suzuki teaches that the fluorene compounds can be used as host materials for phosphorescent materials (examples 78-87). Suzuki teaches that these fluorene host materials can be used to make organic electroluminescent devices with high efficiency and high luminance (page 4 lines 4-8).

15. Sudhakar teaches the number of consecutive fluorene units changes the triplet energy of host materials that use fluorene units (page 7797 left column last paragraph). Sudhakar teaches that the more consecutive fluorene units the low the triplet energy or band gap of the material (page 7797 left column last paragraph). Sudhakar teaches that host materials that have three consecutive fluorene units can be used as a successful host material for red phosphorescent materials (page 7797 right column first paragraph). Sudhakar teaches that these materials are not good host for phosphorescent materials with higher energy levels because of the possible of phosphorescent quenching from the low energy triplet state of the host material (page 7797 right column first paragraph).

16. Kishino teaches a light emitting device comprising a light emitting layer composed of a host material and two phosphorescent dopants (paragraph [0028]). Kishino teaches the two phosphorescent dopants can be $\text{Ir}(\text{bq})_3$ and $\text{Ir}(\text{4mopiq})_3$, which is the same as the applicant's group 1 in claim 23 (Fig. 4 and Table 2). Kishino teaches

that having these two phosphorescent dopants in the light emitting layer leads to a red light emitting devices with improved efficiency and lifetime (Table 2).

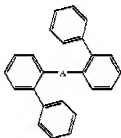
17. It would have been obvious to one of ordinary skill in the art at the time the



invention was made to select

as the A component, where the

number of fluorene units connected to one another is three, and select



as the X' and X'' components to produce a material that

corresponds to applicant's formula I. Robello teaches fluorene as a group that corresponds to A and biphenyl as a group for X' and X'' in Robello's formula (1) and Suzuki teaches that the number of fluorene units found in a host material is preferably from 1 to 3. Sudhakar teaches that fluorene host materials that contain three consecutive fluorene units can be used as host materials for red phosphorescent material, but not phosphorescent dopants with higher energy. The motivation would have been provide a host material that can be used with efficiently with red phosphorescent dopants and can be used to make organic electroluminescent device with high efficiency and high luminance.

18. Furthermore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the light emitting device of Robello, so the light

Art Unit: 1786

emitting layer comprises two phosphorescent dopants that corresponds to applicant's group 1. The motivation would have been to make a red light emitting device with improved efficiency and lifetime.

Conclusion

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew K. Bohaty whose telephone number is (571)270-1148. The examiner can normally be reached on Monday through Thursday 7:30 am to 5:00 pm EST and every other Friday from 7:30 am to 4 pm EST.
20. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on (571)272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.
21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. K. B./
Andrew K. Bohaty
Patent Examiner, Art Unit 1786

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art
Unit 1786